

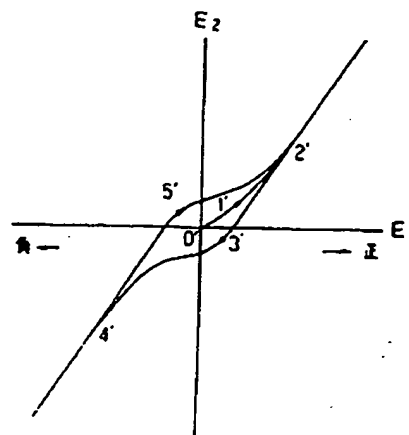
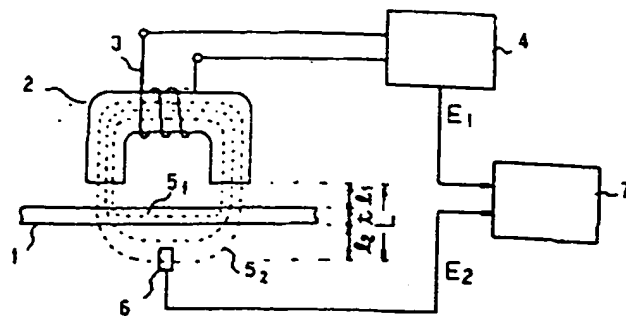
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APPLICANT : NIPPON STEEL CORP;

INVENTOR : TAKATO HIDEO;

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TITLE : MEASURING OF MAGNETIC  
 PROPERTY OF STEEL MATERIAL



ABSTRACT : PURPOSE: To achieve simultaneous measurement of magnetic characteristic value in a contactless manner and online by determining characteristic of variations in the penetration of magnetic flux with respect to changes in an exciting current of an electromagnet employing a magnetic detector provided on one side of a steel material to be measured while the electromagnet on the other side thereof sandwiching it to measure a magnetic characteristic value of the steel material from the resultant characteristic curve.

CONSTITUTION: Magnetic flux 5 generated from a magnetic core 2 comprising magnetic flux 5<sub>1</sub> passing through a steel material 1 and magnetic flux 5<sub>2</sub> penetrating through the back thereof. An apparatus 7 receives the current proportional output E<sub>1</sub> of an exciting power source 4 and the output E<sub>2</sub> of a magnetic detector 6 and computes the magnetic characteristic of the steel material 1 being measured from a characteristic curve representing a relationship of both the outputs. The characteristic curve between the exciting current proportional output E<sub>1</sub> and the output E<sub>2</sub> of the magnetic detector varies in the sequence 0' → 2' → 3' → 4' → 5' → 2' as shown by the arrow, where the penetrating magnetic flux 5<sub>2</sub> decreases as the magnetic flux 5<sub>1</sub> passing through the steel material 1 being measured while it increases as the magnetic flux 5<sub>1</sub> decreases. Since the magnetic flux 5<sub>1</sub> in the steel material being measured is proportional to a magnetization factor thereof, the curve (E<sub>1</sub>-E<sub>2</sub>) is determined by the magnetization characteristic of the steel material to be measured, dimensional distances l<sub>1</sub> and l<sub>2</sub> thereof and the magnetization characteristic of a magnetic core 2.

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